इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 12510 (1988): Wall Clocks (Battery Operated) [PGD 23: Horology]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

UDC681-116-3

IS : 12510 - 1988

Indian Standard

(Reaffirmed 2003)

SPECIFICATION FOR WALL CLOCKS (BATTERY OPERATED)

Horology Sectional Committee, EDC 82 [Ref : Doc : EDC 82 (4674)]

1. Scope — Covers the requirements and methods of test for general purpose wall clocks, powered by 1·5 volt/R6 or R14 size dry cells and batteries.

2. Grade and Style

a) *Grade A* — Clocks capable of keeping accurate time to within two minutes per month (30 days) for quartz clocks, and

b) *Grade B* — Clocks capable of keeping accurate time to within five minutes per month (30 days) for balance type clocks.

3. General Requirements

3.0 The design and construction of the clock shall comply with the requirements specified in **3.1** to **3.5**.

3.1 The clock shall indicate the hour, minute, second and calendar (if provided in the design).

3.2 The wall clock shall be complete with all necessary movement adjustments, requiring only the insertion of proper dry cell 1·5 volt, R6 or R14 size conforming to IS : 8144-1976 'Specification for multipurpose dry batteries' for automatic operation. It shall not be necessary to perform periodic adjustments to obtain the timing accuracy specified in this standard.

3.3 *Cases* — Cases shall be of the surface type, round, square or of any other shape and suitable for hanging on concealed hangers. They shall be made of wood, brass steel or moulded plastic material. All cases of clocks shall have dial covers of either clear plastic or clear glass. The dial covers shall be securely positioned to prevent accidental separation of the dial cover from the case.

3.3.1 *Case finish* — All cases shall have good finish and corrosion resistant surfaces, either by plating, enamelling, lacquering or hot stamping, depending on the material used.

3.4 *Dial and Hands* — Dials shall be of suitable material (mettallic, plastic, etc) resistant to warping and free from any surface irregularities. The surface shall be good in finish and have printed or raised hour and minute markings. The hour markings shall be either in Arabic, Roman or any other type. The hands shall be matching to the dial in colour, shape and size, and clearly readable from a distance and good in finish.

3.5 *Movement*

3.5.1 *Components* — All the components shall be made of good quality material and workmanship to ensure reliable performance and long life of the movement. Clocks shall be factory adjusted to meet the specified timing accuracy and shall be fully capable of meeting the accuracy requirements.

3.5.2 *Reset* — The clock shall have suitable device for resetting the hands, conveniently located for easy operation.

3.5.3 *Regulator* — Grade B type clocks shall be provided with a regulating device and it shall be screw type with a small slotted button or slotted shaft which can be operated without removing the movement from the case. Either the regulator or the case shall be graduated to indicate the amount of regulation. The regulator shall have a range of at least 15 seconds to 10 minutes in 24 h. The rotation of the regulator towards 'F' or '+' indicating fast shall increase the rate and that towards 'S' or '—' indicating slow, shall decrease the rate. The regulator shall be set at mid point of the adjustment (within ± 10 percent of its total range of adjustment) when the clock is factory adjusted to the accuracy requirements of **4.3**.

Adopted 2 November 1988

© April 1989, BIS

Gr 2

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

4. Performance

4.1 *Electrical* — All electrical components shall be designed and constructed so as to operate the clock satisfactorily with a 1·5 volt R6 or R14 size dry cell conforming to IS : 8144-1976 for a minimum period of one year before battery replacement is necessary.

4.2 *Circuit Efficiency* — The efficiency of the wall clock mechanism circuitry shall be such that the energy consumption shall not exceed 6·0 watt-hours when tested as specified in **6.2.1**.

4.3 *Accuracy* — Accuracy shall be determined with the wall clock in a vertical position (the 12 on the dial straight up). Grade A clocks shall neither gain nor loose more than 2 minutes and Grade B shall neither gain nor loose more than 5 minutes in a consecutive 30-day period at 24°C ± 10 percent, and 50 percent relative humidity ± 10 percent. This requirement shall be met without any adjustment necessary after factory setting. The results of the tests in **5.2.2** shall be as given below:

Test Number	Maximum Deviation from Control Device (s)	
	Grade A	*Grade B*
1	12	30
2	12	30
3	12	30

4.4 *Life Expectancy* — The wall clock shall be designed and constructed of suitable materials to ensure continuous operation for at least 5 years from the date of purchase.

5. Inspection and Tests

5.1 *Inspection* — Wall clocks shall be visually examined for the following:

a) General appearance and external defects, such as any loose, missing, damaged, broken or scratched components;

b) Any noticeable defect in the fitting of dial and dial cover, etc.

c) Marking on the dial for any missing, illegible or incomplete marks, scratches or dents on the dial;

d) Hands rubbing against the dial or dial cover, obstruction in the movement of hands, any bent or damaged hands and relative position of hour and minute hands;

e) Surface quality of dial cover and for the presence of blisters, bubbles, scratches, coarse or open seeds, heavy seeds or feathers or any other defects which may impair vision.

5.2 *Tests*

5.2.1 *Circuit efficiency* — The test for circuit efficiency of the wall clock shall be conducted at a test bench or similar location described in **5.2.1.1**, at which a controllable source of DC voltage may be obtained.

5.2.1.1 *Test procedure* — With the power supply connected to the wall clock input terminals and the voltmeter connected across the input, the power supply shall be adjusted to produce a voltmeter reading of 1·25 volts. The average current drain of the circuit shall then be determined by substituting in the following formula to determine compliance with **4.2**:

$$\text{Watt-hour} = 10{\cdot}95 \times I$$

where, I = average current drain in milliamperes.

5.2.2 *Accuracy* — A regulated DC power supply shall be used to supply the voltages for the test. Wall clocks to be tested shall be numbered and shall be placed in a vertical position in a room maintained at the specified temperature (*see* Table 1) for at least 8 hours prior to commencement of the test. Two master timing devices, known to keep correct time to within one second in 72 h when compared with standard time signals controlled by the National Physical Laboratory, New Delhi, shall be used as the control device. (The methods of determining and establishing the accuracy of the control device to within one second in 72 h is left to the discretion of the manufacturer, but must be entirely adequate for the purpose). Suitable instrumentation shall be used to count the seconds registered by both the sample clocks and the control device. Each sample clock shall be tested a minimum of three times; once at each of the conditions shown in Table 1. The test period shall be 72 h (if second hands are utilized, direct reading from the clocks are permitted). All sample clocks for which the tests show a difference in readings of more than the amount specified in **4.3** shall be considered to have failed.

TABLE 1 SPECIFIED TEST CONDITIONS FOR ACCURACY TEST

(*Clause* 5.2.2)

Test No.	Temperature	Relative Humidity	Voltage
1	18°C	50% ± 10%	1·50 Volts ± 1%
2	29°C	50% ± 10%	1·50 Volts ± 1%
3	24°C	50% ± 10%	1·20 Volts ± 1%

6. Sampling

6.1 *Lot* — In a consignment, all the wall clocks (battery operated) of the same grade and style manufactured at a time shall constitute a lot.

6.2 For ascertaining the conformity of the lot with respect to the requirements given in this standard, the procedure for sampling inspection as given in IS : 2500 (Part 1)-1973 'Sampling inspection tables: Part 1 Inspectian by attributes and by count of defects (*first revision*)' shall be followed. Type of sampling plan, inspection level, acceptable quality level (AQL) to be followed for various characteristics shall be as given in **6.2.1** and **6.2.2**.

6.2.1 For general requirements (*see* **3**), inspection requirements (*see* **5.1**), electrical requirements (*see* **4.1**) and circuit efficiency (*see* **4.2**); a single sampling plan with inspection level III and AQL of 2·5 percent as given in Table 1 and Table 2 of IS : 2500 (Part 1)-1973 shall be followed.

6.2.2 For 'accuracy', a single sampling plan with inspection level I and AQL of 2·5 percent as given in Table 1 and Table 2 of IS : 2500 (Part 1)-1973 shall be followed.

7. Packing — Wall clock shall be supplied in a suitable cardboard box together with a guarantee card and a booklet containing instructions for handling the wall clock and its time adjustment.

8. Marking — The back plate of the movement of each wall clock shall be marked with the manufacturer's name, model, serial number and/or grade and the year of manufacture.

8.1 *Standard Marking* — Details available with the Bureau of Indian Standards.

EXPLANATORY NOTE

This standard is one of a series of Indian Standards relating to the clocks. In the preparation of this standard, assistance has been derived from Interim Federal Specification GG-C.001072 (GSA-FSS) 'Clock, wall (Battery operated)'.

Printed at Swatantra Bharat Press, Delhi, India